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Experimental Study of the Potential of Dimethyl Ether EOR in North Sea Chalk Reservoirs

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The present study aims at quantifying, at the laboratory scale, the potential of Dimethyl Ether (DME) Enhanced Oil Recovery (EOR) technology to improve oil recovery in North Sea chalk reservoirs. In DME EOR, the DME is dissolved into the brine and injected into the reservoir. The DME is mutually soluble in the water and oil phases with documented strong partitioning into the oil phase. Thus the DME migrates from the water phase to the oil phase, leading to oil swelling and mobilization of residual oil.

A series of core flood experiments have been carried out at reservoir conditions on aged core plugs from a North Sea chalk reservoir. The results reveal the significant potential of DME-saturated brine injection in improving oil recovery, with the secondary scenario giving a better performance than the tertiary. The results also show that the saturation condition of DME-brine mixture has a direct impact on the additional oil recovery obtained.



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